AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF THE CLAIMS

1.   (currently amended)   An apparatus for sensing a concentration of vaporized hydrogen peroxide in a biocontamination deactivation process, comprising:

a sensing element comprised of an electroactive material, wherein said sensing element is exposed to vaporized hydrogen peroxide inside a chamber, said vaporized hydrogen peroxide effecting biocontamination deactivation;

means for determining a measured value indicative of a change in an electrical property of the electroactive material as a function of time exposure of the electroactive material to the vaporized hydrogen peroxide in the chamber, wherein said change in the electrical property varies in accordance with a change in the concentration of the vaporized hydrogen peroxide in the chamber;

memory means for storing a plurality of predetermined ~~data~~ slope values indicative of changes in said electrical property as a function of time exposure of the electroactive material to vaporized hydrogen peroxide at known concentrations; and

means for determining a concentration of the vaporized hydrogen peroxide corresponding to the measured value using the plurality of predetermined ~~data~~ slope values stored in said memory means.

2.   (original)   An apparatus according to claim 1, wherein said electroactive material includes an electroactive polymer.

3.   (original)   An apparatus according to claim 2, wherein said electroactive polymer is polyacetylene.

4.   (original)   An apparatus according to claim 2, wherein said electroactive polymer is doped with a dopant reactive with vaporized hydrogen peroxide.

5.   (original)   An apparatus according to claim 4, wherein said dopant is iodine.

6.   (original)   An apparatus according to claim 1, wherein said electroactive material includes pitch-based carbon/graphite fibers.

7.   (original)   An apparatus according to claim 6, wherein said pitch-based carbon/graphite fibers are intercalated with bromine molecules.

Claims 8-9   (canceled)

10.   (previously presented)   An apparatus according to claim 1, wherein said apparatus further comprises:

        means for comparing the measured value to the predetermined data stored in said memory means.

Claim 11   (canceled)

12.   (currently amended)   An apparatus according to claim 1, wherein said means for determining the concentration includes:

        means for interpolating or extrapolating slope values from the plurality of predetermined slope values data stored in said memory means.

13.   (currently amended)   A method for sensing a concentration of vaporized hydrogen peroxide during use in a biocontamination deactivation process, the method comprising:

        exposing a sensing element to vaporized hydrogen peroxide inside a chamber, wherein said sensing element includes an electroactive material;

determining a measured value indicative of a change in the electrical property of the electroactive material as a function of time exposure of the electroactive material to the vaporized hydrogen peroxide inside the chamber, wherein said change in the electrical property varies in accordance with a change in the concentration of the vaporized hydrogen peroxide in the chamber;

storing in memory a plurality of predetermined ~~data~~ slope values indicative of changes in said electrical property as a function of time exposure of the electroactive material to vaporized hydrogen peroxide at known concentrations; and

determining a concentration of the vaporized hydrogen peroxide corresponding to the measured value using the plurality of predetermined ~~data~~ slope values stored in said memory.

14.   (original)   A method according to claim 13, wherein said electroactive material includes an electroactive polymer.

15.   (original)   A method according to claim 14, wherein said electroactive polymer is polyacetylene.

16.   (original)   A method according to claim 14, wherein said electroactive polymer is doped with a dopant reactive with vaporized hydrogen peroxide.

17.   (original)   A method according to claim 16, wherein said dopant is iodine.

18.   (original)   A method according to claim 13, wherein said electroactive material includes pitch-based carbon/graphite fibers.

19.   (original)   A method according to claim 18, wherein said pitch-based carbon/graphite fibers are intercalated with bromine molecules.

Claims 20-21 (canceled)

22.   (currently amended) A method according to claim 13, wherein said step of determining a concentration of the vaporized hydrogen peroxide includes the step of comparing the measured value to the <u>plurality of predetermined slope values</u> ~~data~~ stored in said memory.

Claim 23   (canceled)

24.   (currently amended) A method according to claim 22, wherein said method further comprises the step of:

interpolating or extrapolating said <u>plurality of</u> predetermined ~~data~~ <u>slope values</u> stored in said memory.

Claims 25-44 (canceled)

45.   (currently amended) A method for sensing a concentration of a chemical component in a chamber during a biocontamination deactivation process, the method comprising:

exposing a sensing element to the chemical component inside the chamber, wherein said sensing element includes an electroactive material;

determining a measured value indicative of a change in the electrical property of the electroactive material as a function of time exposure of the electroactive material to the chemical component inside the chamber, wherein said change in the electrical property varies in accordance with a change in the concentration of the chemical component in the chamber;

storing in memory <u>a plurality of</u> predetermined <u>slope values</u> ~~data~~ indicative of <u>changes in</u> said electrical property as a function of time exposure of the electroactive material to the chemical component at known concentrations; and

determining a concentration of the chemical component corresponding to the measured value using the <u>plurality of</u> predetermined ~~data~~ <u>slope values</u> stored in said memory.

46.   (original)   A method according to claim 45, wherein said chemical component is selected from the group consisting of: gaseous or vaporous sterilants, and liquid sterilants.

47.   (original)   A method according to claim 45, wherein said chemical component is selected from the group consisting of: vaporized hydrogen peroxide, vaporized bleach, vaporized peracid, vaporized peracetic acid, ozone, ethylene oxide, chlorine dioxide, halogen containing compounds, and mixtures thereof.

48.   (original)   A method according to claim 47, wherein said halogen containing compound includes a halogen selected from the group consisting of: chlorine, fluorine and bromine.

49.   (original)   A method according to claim 45, wherein said electroactive material is an electroactive polymer.

50.   (original)   A method according to claim 49, wherein said electroactive polymer is polyacetylene.

51.   (original)   A method according to claim 45, wherein said electroactive material is doped with a dopant reactive with the chemical component.

52.   (original)   A method according to claim 51, wherein said dopant is iodine.

53.   (original)   A method according to claim 45, wherein said electroactive material includes pitch-based carbon/graphite fibers.

54.   (original)   A method according to claim 53, wherein said pitch-based carbon/graphite fibers are intercalated with bromine molecules.

Claims 55-57 (canceled)

Claim 58   (canceled)

59.   (currently amended) A method according to claim 45, wherein said method further comprises the step of:

interpolating or extrapolating said plurality of predetermined slope values ~~data~~ stored in said memory.

60.   (original)   A method according to claim 45, wherein at least a portion of said electroactive material includes an amorphous region.